CLAIMS

What Is Claimed Is:

1. An orthosis comprising:

a hip engaging unit formed to conform to the contours of a human hip;

an appendant member formed to extend diagonally about and to be fixed to a human appendage, one side of the appendant member is longitudinally displaced from an opposite side of the appendant member to provide corresponding longitudinally displaced fixation points to prevent rotational displacement when mounted about the appendage; and

a connector assembly interconnecting the hip engaging member and the appendant member.

2. The orthosis of Claim 1, wherein the connector assembly includes an articulated joint member and an adjustable linkage system extending across and connected on both sides of the articulated joint, including a first link member that can be adjusted in length to control the movement of the articulated joint.

3. The orthosis of Claim 2, wherein the connector assembly includes an adjustable hinge member to provide a predetermined range of movement between the hip engaging member and the appendant member.

4. The orthosis of Claim 3 further including a second and third link member connected respectively to the first link member and respectively to either side of the articulated joint to form an approximate parallelogram.

5. The orthosis of Claim 2, wherein the first link member includes a turn buckle, which is adjustable to vary the length of the first link member.

6. The orthosis of Claim 2, wherein an adjustable hinge forms a portion of the adjustable linkage system and has a first rotational axis, which is offset by approximately 90° from a second rotational axis of the articulated joint, the adjustable hinge can be set to limit a range of flexion, while movement of the articulated joint provides either adduction or abduction.

7. The orthosis of Claim 2, wherein the articulated joint has a rotational axis and adjustment of the adjustable linkage system provides adduction and abduction movements about the rotational axis.

8. The orthosis of Claim 7 further including an adjustable hinge adjacent the articulated joint, the adjustable joint has a first rotational axis offset by approximately 90° from a second rotational axis of the articulated joint , the first link member is movably affixed adjacent the adjustable hinge and radially offset from the first rotational axis, whereby movement of the adjustable hinge about the first rotational axis will cause movement of the articulated joint about the second rotational axis.

9. The orthosis of Claim 8, wherein a first support post is connected adjacent one side of the articulated joint and a second support post is connected adjacent the other side of the articulated joint and the first link member is pivotally connected between the first and second support posts.

10. The orthosis of Claim 9, wherein the first link member includes a turn buckle which is adjustable to vary the length of the first link member.

11. The orthosis of Claim 2, wherein the connector assembly includes a support plate having a securement portion adjacent an anchor location on the hip engaging unit and a distal portion for linking with the appendant member which is attachable to the user appendage, the securement portion having a curved configuration and a fastening structure that enables an adjustable movement relative to the anchor location to permit sliding movements of the distal end towards and away from the user; and a fastener member for securing the curved configuration to the anchor location to maintain a desired position for the distal end relative to the user.

12. The orthosis of Claim 11, wherein the anchor location has a complementarily curved location to the curved configuration of the securement portion.

13. The orthosis of Claim 12, wherein the support plate has a straight distal portion.

14. The orthosis of Claim 13, wherein the securement portion has an elongated slot for receiving the fastener member.

15. The orthosis of Claim 11, wherein the hip engaging member includes first and second hip engaging members formed to encircle and conform to the contours of a human hip and a connector plate adjustably interconnecting the first and

second hip engaging members, the connector plate including a bridge member extending vertically upward and across relative to connections with the respective first and second hip engaging members to stiffen the connector plate from movement traverse to a plane centrally aligned with a circumference of the hip support assembly, while permitting a greater degree of flex of the connector plate in directions lying across the plane.

16. The orthosis of Claim 15, wherein the connector plate includes a band member with respective apertures for receiving fasteners to affix the connector plate to the respective hip engaging members.

17. The orthosis of Claim 16, wherein the bridge member is sufficiently spaced from the band member to provide a handle for grasping by a human hand.

18. The orthosis of Claim 17, wherein the first and second hip engaging members are respectively formed with rigid plastic outer shells configured to conform to the sides of the human hip.

19. The orthosis of Claim 18, wherein the connector plate extends across a rear of the human hip and is formed of a flexible plastic material.

20. The orthosis of Claim 15, wherein the appendant member is bifurcated into a first section and a second section which are adjustable connected together to permit mounting on the user.

21. The orthosis of Claim 20, wherein the appendant member is a relatively rigid plastic band of a diagonal cylindrical configuration.

22. The orthosis of Claim 21, wherein the appendant member is affixed by one section of the first and second sections to an anchor plate.

23. The orthosis of Claim 22, wherein the anchor plate has a slot for removably securing the other section of the first and second sections.

24. The orthosis of Claim 23, wherein distal ends of the first and second sections relative to the anchor plate are adjustably connected together.

25. The orthosis of Claim 24, wherein one of the distal ends is larger than the other distal end and includes an elongated slot and a fastener member for securing the distal ends together by fastening within the slot.

26. The orthosis of Claim 24, wherein a frictional surface is provided on each distal end to enhance a gripping securement when the fastener member exerts a compression force to the distal ends.

27. The orthosis of Claim 24, further including a female connector secured to the anchor plate and an adjustable strap with a male connector secured to the other section

28. The orthosis of Claim 24, further including a flexible pad member connected to the sleeve member for interfacing with the user appendage.

29. The orthosis of Claim 1 wherein the connector assembly includes an adjustable hinge unit having a variable setting hinge member to control flexion and extension of the human appendage and a pivotal joint member to control abduction and adduction.

30. The orthosis of Claim 29 wherein the pivotal joint member is operatively connected to a follower and cam unit to provide a predetermined abduction and adduction as the human appendage flexes and extends.

31. The orthosis of Claim 30 wherein the pivotal joint member is mounted on the variable setting hinge member in alignment with an axis of rotation of the variable setting hinge member and the follower and cam unit is concentrically mounted about the axis of rotation.

32. An orthosis comprising:

a hip engaging member formed to conform to the contours of a human hip;

an appendant member formed to extend about and be fixed to a human appendage;

a support plate having a securement portion adjacent an anchor location on the hip engaging member and a distal portion for linking with the appendant member which is attachable to the user appendage, the securement portion having a curved configuration and a fastening structure that enables an

adjustable movement relative to the anchor location to permit sliding movement of the distal end towards and away from the user; and

a fastener member for securing the curved configuration to the anchor location to maintain the desired position for the distal end relative to the user.

33. The orthosis of Claim 32, wherein the anchor location has a complementarily curved location to the curved configuration of the securement portion.

34. The orthosis of Claim 33, wherein the support plate has a straight distal portion.

35. The orthosis of Claim 33, wherein the securement portion has an elongated slot for receiving the fastener member.

36. An orthosis comprising:

a hip engaging unit formed to conform to the contours of a human hip having first and second hip engaging members formed to encircle and conform to the contours of a human hip, and a connector plate adjustably interconnecting the first and second hip engaging members, the connector plate including a bridge member extending vertically upward and across relative to connections with the respective first and second hip engaging members to stiffen the connector plate from movement traverse to a plane centrally aligned with a circumference of the hip support assembly, while

permitting a greater degree of flex of the connector plate in directions laying across the plane;

an appendant member formed to extend about and to be fixed to a human appendage; and

a connector unit interconnecting the hip engaging member and the appendant member.

37. In an orthotic brace, the improvement of an adjustable support plate assembly for positioning an appendant orthotic member at an operative position relative to an appendage of the user, comprising:

a support plate having a securement portion adjacent an anchor location on the orthotic brace and a distal portion for linking with the appendant orthotic member which is attachable to the user appendage, the securement portion having a curved configuration and a fastening structure that enables an adjustable movement relative to the anchor location to permit sliding movements of the distal end towards and away from the user; and

a fastener member for securing the curved configuration to the anchor location to maintain a desired position for the distal end relative to the user.

38. The orthotic brace of Claim 37, wherein the anchor location has a complementarily curved location to the curved configuration of the securement portion.

39. The orthotic brace of Claim 38, wherein the support plate has a straight distal portion.

40. The orthotic brace of Claim 38, wherein the securement portion has an elongated slot for receiving the fastener member.

41. The orthotic brace of Claim 38, wherein an anchor plate of a complementarily curved configuration is mounted on the anchor location to receive the fastener member.

42. The orthotic brace of Claim 38, wherein the securement portion has a pair of elongated slots, and a pair of fastener members are configured to fit within the elongated slots and fasten to the anchor location.

43. In an orthotic hip support assembly having first and second hip engaging members formed to encircle and conform to the contours of a human hip, the improvement comprising:

a connector plate adjustably interconnecting the first and second hip engaging members, the connector plate including a bridge member extending vertically upward and across relative to connections with the respective first and second hip engaging members to stiffen the connector plate from movement traverse to a plane centrally aligned with a circumference of the hip support assembly, while permitting a greater degree of flex of the connector plate in directions lying across the plane.

44. The orthotic hip support assembly of Claim 43, wherein the connector plate includes a band member with respective apertures for receiving fasteners to affix the connector plate to the respective hip engaging members.

45. The orthotic hip support assembly of Claim 44, wherein the bridge member is sufficiently spaced from the band member to provide a handle for grasping by a human hand.

46. The orthotic brace support assembly of Claim 44, wherein the apertures are elongated slots with surrounding perimeters of a textured configuration.

47. The orthotic hip support assembly of Claim 43, wherein the first and second hip engaging members are respectively formed with rigid plastic outer shells configured to conform to the sides of the human hip.

48. The orthotic hip support assembly of Claim 43, wherein the connector plate extends across a rear of the human hip and is formed of a flexible plastic material.

49. In an orthotic brace that is to be affixed to an appendage of a user, the improvement comprising:

a sleeve member extending about a circumference of the appendage, wherein one side of the sleeve member is longitudinally displaced from an opposite side of the sleeve member along the appendage to provide

corresponding displace fixation locations to prevent rotational displacement about the appendage.

50. The orthotic brace of Claim 49, wherein the sleeve member is bifurcated into a first section and a second section which are adjustably connected together to permit mounting on the user.

51. The orthotic brace of Claim 50, wherein the sleeve member is a relatively rigid plastic band of a diagonal cylindrical configuration.

52. The orthotic brace of Claim 50, wherein the sleeve member is affixed by one section of the first and second sections to an anchor plate.

53. The orthotic brace of Claim 52, wherein the anchor plate has a slot for removably securing the other section of the first and second sections.

54. The orthotic brace of Claim 52 wherein distal ends of the first and second sections relative to the anchor plate are adjustably connected together.

55. The orthotic brace of Claim 52, wherein one of the distal ends is larger than the other distal end and includes an elongated slot and a fastener member for securing the distal ends together by fastening within the slot.

56. The orthotic brace of Claim 55, wherein a textured frictional surface is provided on each distal end to enhance a gripping securement when the fastener member exerts a compression force to the distal ends.

57. The orthotic brace of Claim 52 further including a female connector secured to the anchor plate and an adjustable strap with a male connector secured to the other section to provide a releasable locking.

58. The orthotic brace of Claim 46 further including a flexible pad member connected to the sleeve member for interfacing with the user appendage.

59. In an orthotic brace that has an articulated joint, the improvement comprising:

an adjustable linkage system extending across and connected on both sides of the articulated joint, including a first link member that can be adjusted in length to control the movement of the articulated joint.

60. The orthotic brace of Claim 59 further including a second and third link member connected respectively to the first link member and respectively to either side of the articulated joint to form an approximate parallelogram.

61. The orthotic brace of Claim 59, wherein the first link member includes a turnbuckle which is adjustable to vary the length of the first link member.

62. The orthotic brace of Claim 59, wherein an adjustable hinge forms a portion of the adjustable linkage system and has a first rotational axis, which is offset by approximately 90° from a second rotational axis of the articulated joint, the adjustable hinge can be set to limit a range of flexion, while movement of the articulated joint provides either adduction or abduction.

63. The orthotic brace of Claim 59, wherein the articulated joint has a rotational axis and adjustment of the adjustable linkage system provides adduction and abduction movements.

64. The orthotic brace of Claim 63 further including an adjustable hinge adjacent the articulated joint, the adjustable hinge has a first rotational axis offset by approximately 90° from a second rotational axis of the articulated hinge, the first link member is movably affixed adjacent the adjustable hinge and radially offset from the first rotational axis, whereby movement of the adjustable hinge about the first rotational axis will cause movement of the articulated joint about the second rotational axis.

65. The orthotic brace of Claim 64, wherein a first support post is connected adjacent one side of the articulated joint and a second support post is connected adjacent the other side of the articulated joint and the first link member is pivotally connected between the first and second support posts.

66. The orthotic brace of Claim 65, wherein the first link member includes a turnbuckle which is adjustable to vary the length of the first link member.